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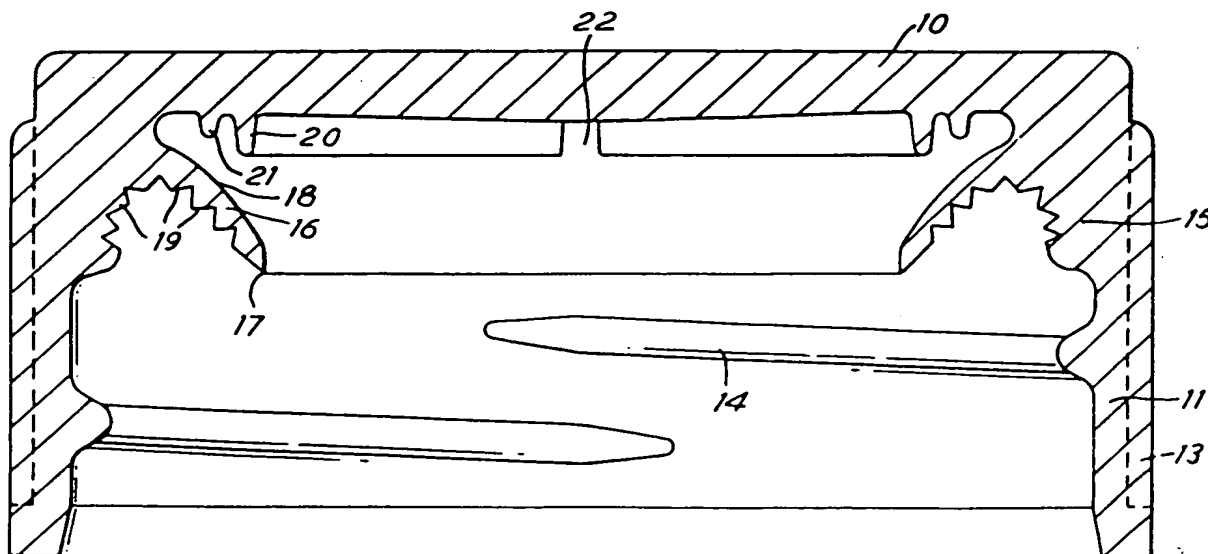
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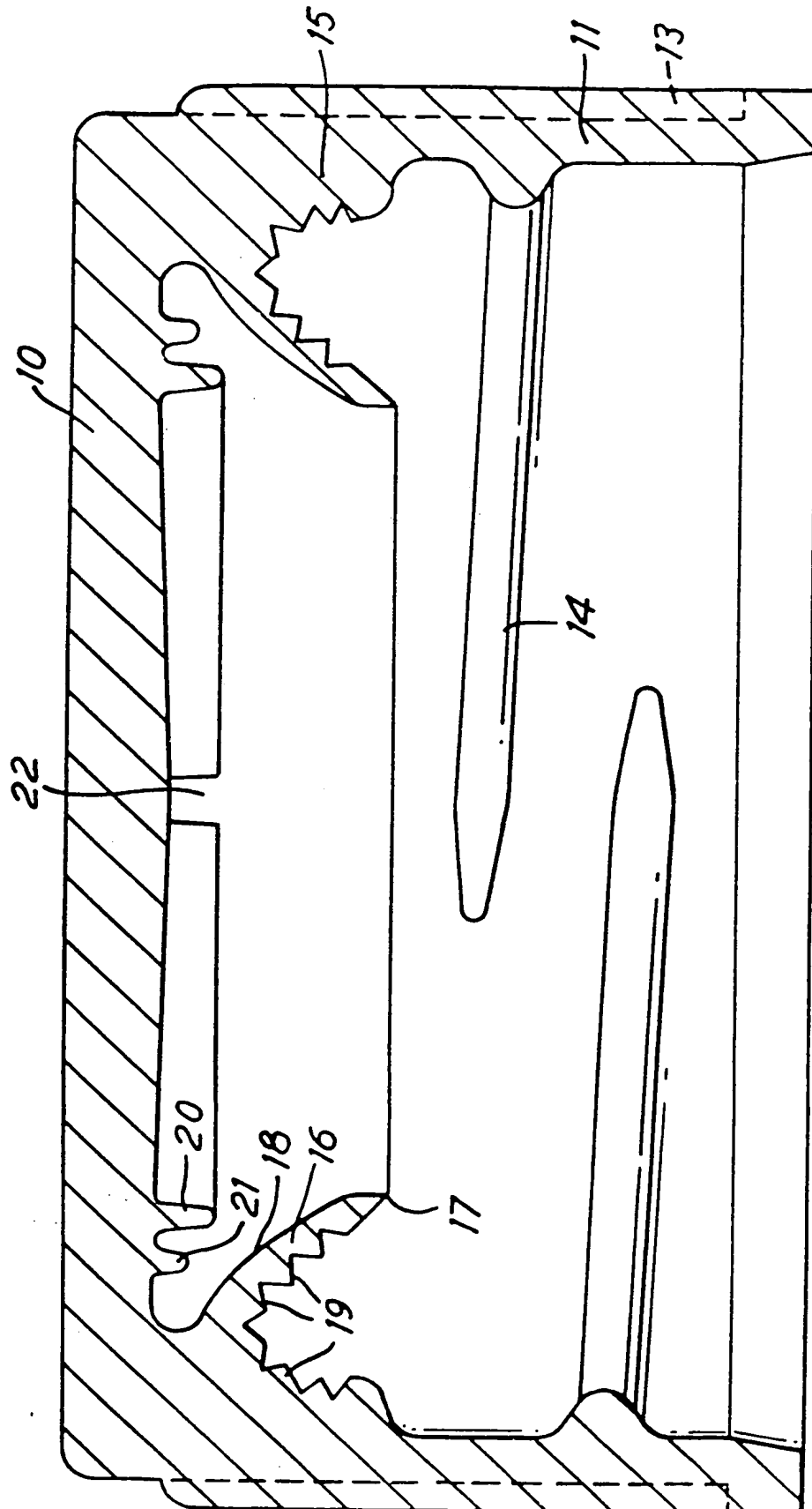
(54) Containers

(57) A one-piece moulded closure for a bottle or other container for carbonated or still beverages has an inwardly and downwardly inclined sealing fin 16 extending from the region of the outer edge of the top of the closure, and two support rings 20, 21 moulded on the underside of the top serve to limit the extent of upward deflection of the fin when the closure is screwed on to the container and is contacted by the top of the container. The fin forms a seal with the top of the container. Any pressure within the container is applied also to the top surface of the fin so as to urge it more tightly into sealing engagement with the top of the container, interruptions 22 being provided for this purpose in the rings 20, 21.

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## SPECIFICATION

**Improvements relating to closures for bottles and other containers**

5 This invention relates to closures for container and has a particularly useful but not exclusive application in closures for bottles intended to contain liquid carbonated or still beverages.

10 According to this invention there is provided a container closure having a top and a depending peripheral skirt, an internal annular resilient sealing fin extending inwardly from the region of the junction between the top and the skirt, and two support ridges projecting from the underside of the top towards spaced coaxial locations on the sealing fin for urging the fin into sealing engagement with the neck of a container, and passage means operating, when the support rings are in contact with the sealing fin, to cause the annular space between the two support ridges and the annular space between the radially outer support ring and the sealing fin to be subjected to the same pressure as obtains within the container.

25 The sealing fin is preferably inclined inwardly and away from the top of the closure.

Preferably also the radially inner support ridge projects further from the top than the outer support ridge.

30 According to a preferred feature of the invention the closure is a one-piece moulded closure, the skirt having an internal screw thread and, above the screw-thread, a shoulder portion adapted to form a seal with an external cylindrical surface of the neck of the container, and the sealing fin has its root in the upper portions of the shoulder so that the shoulder and the fin together envelop said cylindrical surface and the top of the neck of the container.

The lower surface of the sealing fin is preferably formed with concentric annular ribs for engaging the sealing surfaces of the container neck, and the radially inwardly facing surface of the shoulder may also be formed with sealing ribs.

The sealing ribs preferably have a saw-tooth configuration when viewed in cross-section, and have the advantage of providing a series of line contacts between the fin and the co-operating sealing surfaces of the container. The ribs may also assist in centring the closure on the neck during application of the closure.

According to a preferred feature of the invention, the top of the closure thickens progressively towards its centre.

The skirt of the closure will normally be screw-threaded to engage a corresponding screw-thread provided on the external surface of the neck of a container.

Closures in accordance with the present invention are preferably moulded from a plastics material such as polyethylene or polypropylene by injection moulding. The closure may also include a pilfer-proof sealing ring of a known type extending downwardly from the base of the skirt and adapted to engage with corresponding retaining means on the neck of the container.

One embodiment of the present invention will now be described by way of example with reference to the accompanying drawing showing in cross-section a closure according to the invention.

70 Referring to the drawing the closure is moulded from a plastics material and comprises a top 10 and a peripheral depending skirt 11. The top 10 increases in thickness progressively towards the lengthwise axis of the closure. The external surface of the skirt is provided with a plurality of longitudinal flutes 13 to provide improved grip for applying and removing the closure.

The skirt of the closure has an internal screw-thread ridge 14 which in the illustrated construction extends through just over one complete turn of the closure, and above the ridge is formed with an inwardly projecting shoulder 15 extending to the top 10. From the shoulder, at a location near the top a resilient annular sealing fin 16 extends inwardly and downwardly and terminates in an edge 17. In the construction shown the fin is slightly curved in cross-section, the convex face 18 of the fin being nearer the top. The underneath face of the fin and the adjoining surfaces of the shoulder are formed with a series of sealing ribs 19 of saw-tooth form. Two stiff concentric support ridges 20, 21 project from the underside of the top towards the sealing fin, the inner ring 20 projecting to a greater extent than the outer ring 21. The two rings have each four short interruptions 22 in their length, spaced apart at intervals of 90° about the central axis of the closure.

When the closure is applied to a bottle, the sealing fin 16 flexes as it comes into engagement with the rim about the mouth of the bottle, and screwing the closure on to the bottle bring the support ridges 20, 21 into contact with the upper surface of the sealing fin to press the ribs on the fin into good sealing engagement with the rim. At the same time the ribs 19 on the shoulder 15 come into sealing engagement with an external cylindrical surface adjoining the rim of the bottle. Since the inner support ridge 20 projects to a greater extent below the top than the outer support ridge 21 the two ridges tend to maintain the sealing fin in an inclined attitude. When the bottle contains a carbonated beverage, the gas pressure within the bottle is transmitted through the interruptions 22 in the lengths of the support ridges to the upper surface of the fin so as to assist in pressing the fin on to the rim of the bottle. The ribs on the shoulder and sealing fin form a series of line-contact sealing zones with the neck of the container and by reason of the support given to the sealing fin by the support ridges the fin can be made more flexible, which also assists in achieving a satisfactory seal while enabling the amount of material in the closure to be reduced, and reducing the torque necessary to tighten the closure.

## CLAIMS

125 1. A container closure having a top and a depending peripheral skirt, an internal annular resilient sealing fin extending inwardly from the region of the junction between the top and the skirt, and two support ridges projecting from the underside of the

top towards spaced coaxial locations on the sealing fin for urging the fin into sealing engagement with the neck of a container, and passage means operating, when the support rings are in contact with the sealing fin, to cause the annular space between the two support ridges and the annular space between the radially outer support ring and the sealing fin to be subjected to the same pressure as obtains within the container.

10 2. A closure as claimed in claim 1, wherein the sealing fin is inclined inwardly and away from the top of the closure.

3. A closure as claimed in claim 2, wherein the radially inner support ridge projects further from the top than the outer support ridge.

15 4. A closure as claimed in any one of claims 1 to 3, wherein the closure is a one-piece moulded closure, the skirt having an internal screw-thread and, above the screw-thread, a shoulder portion adapted to form a seal with an external cylindrical surface of the neck of the container, and the sealing fin has its root in the upper portions of the shoulder so that the shoulder and the fin together envelop said cylindrical surface and the top of the neck of the container.

25 5. A closure as claimed in claim 4 wherein the lower surface of the sealing fin is formed with concentric annular ribs for engaging the sealing surfaces of the container neck, and the radially inwardly facing surface of the shoulder may also be formed with sealing ribs.

30 6. A closure as claimed in claim 5, wherein the sealing ribs have a saw-tooth configuration when viewed in cross-section.

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